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The major finding of this study is that measures of concentration are not reliable indicators of the level of competition in a small, open economy like Indonesia is now. This arises for at least three reasons. First, in a small, open economy, domestic concentration measures (unadjusted for foreign trade) are irrelevant measures of market power, as they do not include foreign competitors in the domestic market. Furthermore, import competition constrains market power of dominant firms in most kinds of markets. Second, concentration is only one element of market structure; others include barriers to entry. Finally, concentration statistics are static measures in that they simply record the characteristics of a size distribution at some particular point. The results of this study indicate that there is a long-term decline in Indonesia's concentration since the mid 1970s, particularly in those industries that were concentrated then. The study found that allowing for trade substantially reduces average concentration measures. Finally, statistical analysis of the impact of concentration on profits for a cross section of 67 industries shows that concentrated industries with high levels of protection have relatively high profit margins compared to concentrated industries with low levels of protection. This result establishes a direct link between trade policy reform and competition in Indonesian manufacturing.

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ARE INDUSTRIAL CONCENTRATION AND MARKET SHARES RELIABLE INDICATORS OF COMPETITION?

by Kelly Bird, August 1999

USAID Partnership for Economic Growth (PEG) Project¹

INTRODUCTION

It is a popular view that industrial concentration in the Indonesian economy is relatively high and on the rise, and that policy reforms introduced by the government since 1986 have done little to moderate this trend. This view equates high industrial concentration with monopoly or other anti-competitive outcomes. This position is uncritically accepted and widely disseminated by authors of the non-professional (and sometimes professional) literature on the subject, including both the Indonesian and foreign press. In recent years the debate has intensified, with significant coverage in the Indonesian media, and numerous seminars on competition policy. Most recently, the anti-monopoly and unhealthy competition law was passed by parliament. Due to come into force early next year, the law includes provisions relating to both structure and conduct; it prohibits price fixing agreements, market sharing agreements and vertical restraints, and has clauses covering vertical integration and price behavior of various kinds. Some articles of the new law appear to reflect this structural/concentration view of competition. In particular, two articles of the law set parameters for the competition commission to open investigations on firms holding 50% market share or two or three firms with a combined market share of 75% for either abuse of dominant position or monopoly practices.

The primary objective of this paper is to assess whether measures of concentration, such as the four-firm concentration ratio (the combined market share of the largest four firms in an industry) are reliable proxy for the level of competition in the Indonesian manufacturing sector. For this purpose we analyze trends and levels of industrial concentration in 102 Indonesian industries between 1975 and 1993, and review the evidence on the impact of concentration on industry performance.

The major conclusion of this study is that measures of concentration are not reliable indicators of the level of competition in an open economy like Indonesia is now. This arises for at least three reasons. First, in an open economy, domestic concentration measures (unadjusted for foreign trade) are irrelevant measures of market power, as they do not include foreign competitors in the domestic market. Second, concentration is only one element of market structure; others include barriers to entry. Finally, concentration statistics are static measures in that they simply record the characteristics of a size distribution at some particular point. They ignore the dynamics of the competitive process within an industry. It is possible to find oligopolies in Indonesia where there is vigorous competition among the market leaders.

Our analysis of trends over the period 1975-93 shows a decline in average concentration. The simple average four-firm concentration ratio declined from 64% in 1975 to 54% in 1993. Allowing for foreign trade substantially reduces average concentration measures: in 1993 the

¹ PEG is a USAID-funded Project with the Government of Indonesia. The views expressed in this report are those of the author and not necessarily those of USAID, the U.S. Government or the Government of Indonesia.

average concentration of a sample of 67 industries was 53% without the adjustment of foreign trade, but 41% if foreign trade is allowed for. Thus, competition is stronger in Indonesian markets than domestic concentration ratios would suggest.

Our statistical analysis of the impact of concentration on profits for a cross section of 67 industries in 1993 shows that concentrated industries with relatively high levels of protection have high profit margins compared to concentrated industries with low levels of protection. This result establishes a direct link between trade policy reform and competition in Indonesian manufacturing; trade policy reform increases import competition in concentrated manufacturing industries, which in turn narrows profits across concentrated industries, all other things being equal.

This paper begins with a discussion of market structures and the limitations of industrial concentration measurements. It then examines patterns of change and trends in concentration from 1975 to 1993. Discussion follows of the impact of foreign trade on seller concentration and characteristics of concentrated industries. Indonesia's industrial concentration statistics are compared with those of other countries that have liberalized their trade regimes. The dynamics of industrial competition, as reflected in changes in leading firms' market shares, are examined in a selected number of Indonesian oligopolies. The next section reviews the evidence on the impact of concentration on industry performance, including productivity growth and profitability. The final two sections discuss competition policy and ends with a summary of our main findings.

2 MARKET STRUCTURES, CONCENTRATION AND COMPETITION

In the traditional industrial organization literature, concentration of sales among a few firms was assigned an important role in the analysis of market structure, conduct and performance.² It was often used as a measure of market structure (Scherer 1970) and as an indirect measure of the intensity of competition (Bain, 1956). Under this approach, it was believed that the higher the concentration ratio the greater was the possibility that firms would exercise their market power or collude to set excessive prices and earn supernormal profits. Some articles of Indonesia's new competition law appear to reflect this traditional view of competition. Two articles of the law set parameters for the competition commission to open investigations on firms holding 50 per cent market share or two or three firms with a combined market share of 75 per cent for either abuse of dominant position or monopoly practices.

However, several leading economists have criticized this concentration-collusion hypothesis.³ Demsetz (1973), for example, argues that the high-concentration-profit result can be the outcome of efficient firms growing faster than less efficient firms.

Most economists acknowledge that high concentration is a *necessary*, but not a *sufficient*, condition for the possibility of anti-competitive behavior. Concentration measures are only one element of market structure; others include entry barriers and exit costs (including regulations restricting entry and exit of firms) that may affect the level of competition in an individual market. In fact, barriers to entry are considered more important influences on firm behavior than concentration measures. In general, in the absence of significant barriers to entry, it is unlikely that a dominant firm can sustain excessive prices in the long run. If the dominant firm prices

² This literature, popular in the 1960s and 1970s in the US, asserted that certain structural features (number of firms, seller concentration, advertising etc.) of an industry shaped the nature of competition among leading firms, which in turn determined industrial efficiency.

³ See Schmalensee (1989) for a comprehensive critique of this structural approach to competition.

above the competitive rate of return entry will occur eventually dissipating excessive profits and driving prices down to competitive levels, and if the dominant firm wants to deter entry it will have to price competitively.

Even high concentration combined with high barriers to entry does not fully condition the extent of competition in an industry. Recent empirical research for other countries and in Indonesia show that for each specific market structure (apart from one characterized by a large number of firms) a range of firm behavior or conduct is possible. An oligopoly's behavior, for example, can range between price collusion and intense price competition (we will present some examples for Indonesia in section 5). Conversely, in Indonesian manufacturing there are several low concentrated markets that have had anti-competitive outcomes (excessive costs and/or prices) in the past as a result of government constraints on trade and competition. Examples included sugar processing and plywood.

Most of the earlier literature on industrial concentration and profits was developed within a large, closed (no international trade) economy model. Today, international trade is well established and most countries have moved towards free(r) trade with the rest of world. In other words, 'globalization' has integrated economies with one another, and this has important implications for competition and prices in a small, open economy like Indonesia is now.⁴ In a small, open economy, domestic prices of tradable goods – goods/services that can be exported or imported - are determined by world prices. As a result, foreign trade will significantly influence competition and prices in the domestic market. Import competition constrains market power of domestic monopolies and oligopolies in tradable goods by imposing a ceiling on the price they can charge consumers or other downstream producers. Exports impose a floor on domestic prices of tradable goods. That is, if the export price for the same good is higher than its domestic price, then firms will export the product and this will drive up domestic prices towards their world prices in the local currency. International trade also has important implications for measuring seller concentration in a domestic market. In a small, open economy, domestic concentration (unadjusted for foreign trade) statistics are irrelevant measures of market structure as they ignore foreign competitors in the domestic market. Thus, at the minimum, it is essential to adjust concentration ratios for foreign trade to obtain a more accurate measure of market structure.

Finally, concentration statistics are static measures in the sense that they simply record the characteristics of a size-distribution at some particular instant. They ignore the dynamics of the competitive process occurring within an industry, that is, how the industry reached that position (Baldwin, 1998). Generally, in the absence of regulations restricting competition, if the identity of the dominant firms were to change over time, then even persistently high levels of concentration would not imply the absence of competitive forces.

3 TRENDS IN INDUSTRIAL CONCENTRATION

This section examines the trend in industrial concentration levels of 102 four and five-digit ISIC manufacturing industries over the period 1975 to 1993. We measure industrial concentration by the four-firm concentration ratio; that is, the combined market share of largest four firms in the industry. The source is the manufacturing surveys of medium and large establishments, BPS.

⁴ Indonesia is a small economy relative to the rest of the world. While Indonesia is the fourth most populous country in the world, its economy accounts for less than 1 per cent of the world's output at pre-crisis official exchange rates. Countries like Canada and South Korea (two larger economies than Indonesia) are also referred to as 'small' economies in the economics literature.

This survey seeks to enumerate all non-oil manufacturing establishments with 20 or more employees. For the greater part of the study period (until 1990), Indonesian manufacturing was classified into 119 four and five-digit ISIC industries. We have dropped 17 industries from the analysis, eight because their product classification is so broad that it has no economic meaning (these are the ‘not else included’ group), and nine because their classification has changed since 1990, and thus, their results can not be compared with those from previous years. This leaves a sample of 102 industries, which produced around 94 per cent of total manufacturing value added in 1993.

We review concentration trends over a long time period, because competition is a long run phenomenon, and concentration levels in the short-run often fluctuate around their long-run trends. Examining trends in concentration over a short period, say four or five years, conveys very little information about the long-term trends in concentration and pattern of change in concentration.

SHIFTS IN THE DISTRIBUTION OF INDUSTRIES BY CR4 CLASS

Levels of concentration are divided into quartile classes: 0-24%, 25-49%; 50-74%, and 75-100%. Industries with a CR4 ratio above 75% are referred to as highly concentrated; those with a CR4 of 50-74% as moderately concentrated; and those with a CR4 of less than 50% as having low concentration. These four classes are chosen for purposes of comparison with other studies.

Table 1 presents the distribution of industries and manufacturing value added by concentration class interval. There is a reasonable degree of variation among CR4 classes in the percentage of industries and their share of manufacturing value added (MVA). The share of concentrated industries declined from 39% of total industries in 1975 to 28% in 1993. The share of manufacturing value added emanating from highly concentrated industries has fluctuated over this period from a peak of 49% in 1980 to 31% in 1993. Over the sub-period of 1990 to 1993 the

TABLE 1: THE DISTRIBUTION OF INDUSTRIES AND SHARE OF MANUFACTURING VALUE ADDED BY CR4 CLASS; 1975-93

CR4 Class	1975	1980	1985	1990	1993
Number and percentage of industries					
75 – 100	40 (39.2%)	29 (28.4%)	23 (22.5%)	22 (21.6%)	28 (27.5%)
50 - 74	31 (30.4%)	35 (34.3%)	30 (29.4%)	25 (24.5%)	24 (23.5%)
25 – 49	19 (18.6%)	30 (29.4%)	32 (31.4%)	37 (36.3%)	36 (35.3%)
0 – 25	12 (11.8%)	8 (7.9%)	17 (16.7%)	18 (17.6%)	14 (13.7%)
Share of Manufacturing Value Added					
75 - 100	36.1	49.0	36.6	35.0	31.1
50 – 74	27.6	15.1	11.4	14.0	18.1
25 – 49	9.0	18.5	21.4	19.0	31.7
0-24	27.3	17.4	30.6	32.0	19.1

*Percentages in parenthesis
102 non-oil/gas industries

percentage of highly concentrated industries has increased from 22 to 28 percent. The share of MVA emanating from these highly concentrated industries actually decreased from 35% in 1990 to 31% in 1993. The decline in the share of MVA during this period was primarily due to a number of large sectors (i.e., ISIC 3700 basic iron and steel industry) shifting to the moderately concentrated class (CR4 between 50 and 75%) by 1993. The converse is found for the lowest two CR4 class intervals. The percentage of low concentrated industries has increased from 30 in 1975 to 49% of total industries in 1993. The share of manufacturing value added emanating from this class has increased from 36% in 1975 to 51% in 1993.

TRENDS IN AVERAGE CONCENTRATION

We now examine the trend in average concentration from 1975 to 1993 for the sample of 102 industries, and for sub-samples of industries with high and low concentration.

Table 2 shows the simple and weighted average CR4 levels over the period 1975-1997. A visual representation of average CR4 trends is presented in Figure 1. A weakness of the simple average CR4 is that it does not take account of the differences in output sizes between industries. We therefore include a weighted average CR4 ratio. The weighted average CR4 uses the industry's share of total manufacturing output in the current year as a weight, to adjust for differences in output sizes among industries.

TABLE 2 TRENDS IN AVERAGE FOUR-FIRM CONCENTRATION RATIOS: 1975-93

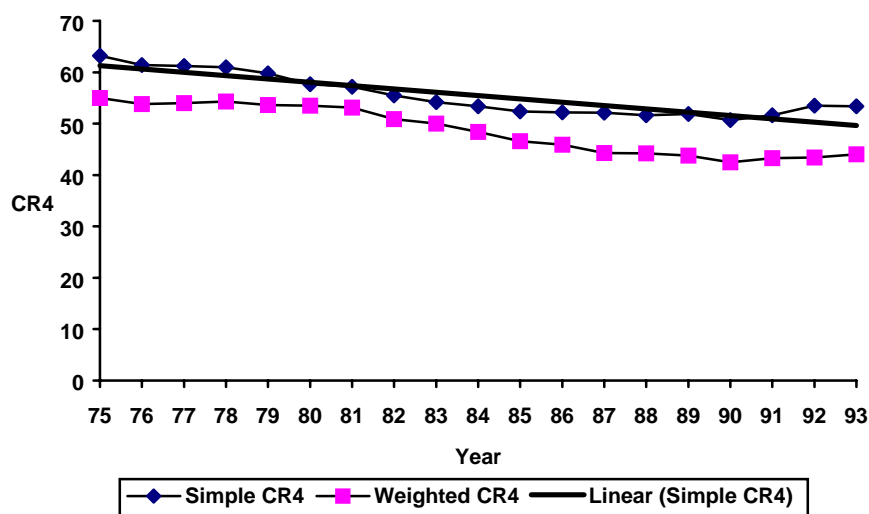
Year	Simple Average CR4	Weighted Average CR4
1975	63.6	55.0
1976	61.9	53.8
1977	61.5	54.0
1978	61.2	54.3
1979	60.0	53.6
1980	57.9	53.5
1981	57.5	53.1
1982	56.0	50.9
1983	54.5	50.0
1984	53.6	48.4
1985	52.6	46.6
1986	52.4	45.9
1987	52.3	44.3
1988	51.8	44.2
1989	52.1	43.8
1990	50.9	42.5
1991	51.8	43.3
1992	53.7	43.4
1993	53.5	44.0
% point change: 1975-93	-10.1	-11.0

Source: Bird (1999)

Consider, first, the trend in the simple average four-firm concentration ratio. Average concentration fell from 64% in 1975 to 51% in 1990, and increased to 54% in 1993. These levels are relatively high by international standards (table 8), but this is expected because Indonesia's relatively small market size. Over the entire period average concentration declined by 10.1 percentage points, and there was a continuous reduction during most of this time. This significant negative trend in concentration is expected in a rapidly industrializing and growing economy such as Indonesia had at this time.

The weighted average of concentration show a similar trend. The current-year weighted average concentration ratio fell 11 percentage points from 55% in 1975 to 44% in 1993. The simple average concentration is greater than weighted average concentration, suggesting that concentration must be negatively correlated with industry output size; that is, concentrated industries are smaller on average than unconcentrated industries.

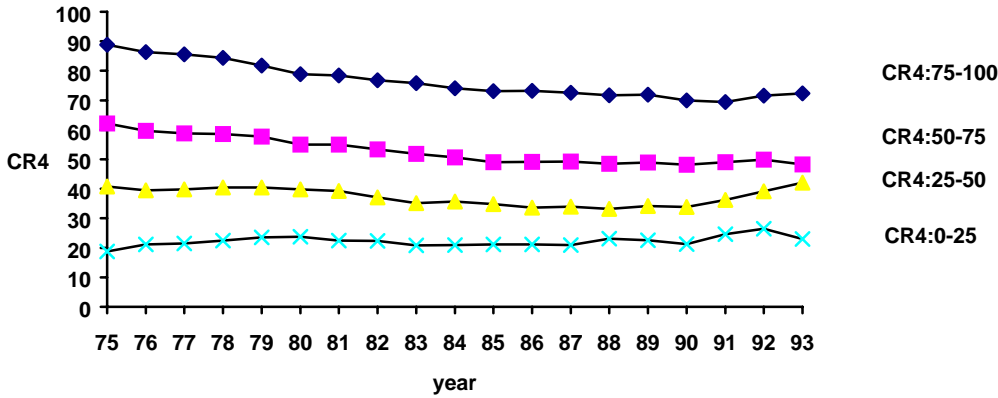
FIGURE 1 TRENDS IN AVERAGE CONCENTRATION, 1975-93



DO HIGHLY CONCENTRATED INDUSTRIES BECOME LESS CONCENTRATED OVER TIME?

Does the trend in concentration vary among CR4 classes? For example, does average concentration decline more rapidly in highly concentrated industries than in others? The data point towards a rapid fall in the average CR4 levels of highly concentrated and moderately concentrated industries over the period 1975 to 1991, and a slight increase in concentration in 1992 and 1993 (figure 2). Less concentrated industries show a rise in average concentration over this period.

**Figure 2 Trends in Average Concentration by 1975 CR4 Class
(simple averages)**



Average concentration in highly concentrated industries declined from 89% in 1975 to 69% in 1991, and increased to 72% in 1993. Over the entire period of 1975-1993 it fell by 17 percentage points, more than the 10.1% fall for the average for all manufacturing industries (Table 2). In moderately concentrated industries, average concentration decreased from 62% in 1975 to 49% in 1985, and has remained fairly stable since then. During this period under study it declined by 13.8 percentage points. This contrasts with the pattern in the two least concentrated classes. The simple average CR4 in the second lowest concentration class (CR4 between 25 and 50%) decreased from 40% in 1975 to 33% in 1988, but increased to 42.1% by 1993. In the lowest CR4 class (CR4 less than 25%) average concentration increased from 18.8% in 1975 to 23% in 1993. The trends confirm our earlier conclusion (tables 1-2) that highly concentrated industries have experienced a decline in their concentration levels over time. This trend has also been observed in Canadian manufacturing industries (Baldwin, 1998) and in United States manufacturing industries (Brozen, 1982). Secondly, in the words of Brozen (1982: 96) “there is a centripetal tendency for CR4s to move towards the manufacturing average”. Concentrated industries tend to become less concentrated, moving towards the average concentration ratio. Low concentrated industries tend to become more concentrated, also moving toward the central value of all concentration ratios. In other words, the trends in average concentration across and within different CR4 class intervals suggest that differences in CR4 levels have tended to decrease over time. To confirm this, we estimate the following simple regression by OLS:

$$CR4_{1993,i} = \alpha + \beta CR4_{1975,i} + \mu,$$

where i refers to industry i . By regressing the 1993 CR4 levels on the initial (1975) CR4 levels, we can ascertain whether concentration is regressing to the manufacturing average of CR4 (i.e. $\beta < 1$), whether concentrated industries are becoming more concentrated relative to less concentrated ones (i.e. $\beta > 1$), or whether concentration is stable over time (i.e. $\beta = 1$). The estimated equation is:

$$CR4_{1993,i} = 0.092 + 0.702CR4_{1975,i}.$$

The estimated slope coefficient (β) of 0.702 is significantly less than one at the 5% level, indicating that there is a tendency for CR4s to move towards the manufacturing average.

ADJUSTING TO FOREIGN TRADE

The above results relate only to concentration of production and do not take account of foreign trade. Even though trade-adjusted concentration ratios may contain measurement errors because of data limitations, it is important, especially in a small, open economy like that of Indonesia, to take account of foreign trade in measuring concentration, in order to capture more accurately seller concentration.

Adjustments for foreign trade can be made only on certain simplifying assumptions using available data. It is necessary to assume, first, that industries are dominated by domestic firms (that is, foreign firms are not amongst the top four suppliers in the Indonesian market); second, that the top four firms do not import goods for sale in Indonesia; and finally, that these firms export a proportion of their sales, so that no special adjustments for exports need to be made. Clearly, there cases in which one or more of these assumptions would be invalid, but in the absence of detailed knowledge of individual industries it is not possible to adjust to these factors in a systematic way. This limitation must be borne in mind when interpreting these results reported here. On the basis of above assumption, it can be shown that concentration adjusted for foreign trade becomes:

$$CR4MX = \frac{CR4(Q - X)}{Q - X + M}$$

where CR4MX = trade adjusted four-firm sales concentration
 CR4 = unadjusted four-firm sales concentration
 Q = domestic production
 X = exports
 M = imports

The denominator Q-X-M estimates domestic consumption of the good, or the size of the domestic market. The numerator CR4(Q-X) estimates the amount of domestic production of the four largest firms that is sold on the domestic market, assuming that these firms export in proportion to their sales. Thus, CR4MX estimates the proportion of total domestic sales emanating from the largest four firms.

The import and export data are extracted from the BPS Input-Output Tables for 1975, 1980, 1985, and 1990. The data for 1993 are taken from a preliminary 1993 Input-Output Table provided to us by BPS.⁵ Sixty-seven I-O industries and ISIC industries have an exact or nearly matching concordance, and we use these industries to examine the trend in trade-adjusted concentration ratios (table 3).

⁵ The BPS publishes Input-Output Tables every five years. At the time of this study the 1995 Input-Output Table was not available

Table 3 Comparison of Unadjusted and Foreign Trade-Adjusted CR4

	Unadjusted CR4	Foreign Trade Adjusted CR4
1975	63.5	46.9
1980	58.8	46.0
1985	53.6	42.9
1990	53.0	41.5
1993	53.3	41.1
% change 1985-93	-0.3	-1.8

Source: Bird (1999)

First, it is immediately apparent that allowing for foreign trade reduces the average concentration measure substantially. In 1993, for example, the difference between the two figures was 12.2 percentage points. Some part of this difference will be due to measurement errors in adjusting for foreign trade, in particular, the assumption that all imports are competitive. Nevertheless, it seems likely that the bulk of foreign trade does reflect the importance of foreign trade in Indonesian markets in 1993. When such trade is allowed for, the results suggest that competition is stronger in Indonesian markets than domestic concentration ratios would indicate.

Second, over the period 1985 to 1993 average trade-adjusted concentration fell by 1.8 percentage points compared with a fall of 0.3 percentage points in domestic concentration. While the fall in trade-adjusted concentration is not large, the difference between the two results indicates that the decline in average concentration since 1985 is due to primarily to rising foreign trade (1.5 percentage points) and less to falls in domestic concentration (0.3 percentage points). In other words, while domestic concentration shows a slight increase in the 1990s, rising import competition is shown to reverse this result trend when concentration is adjusted for foreign trade.

CHARACTERISTICS OF HIGHLY CONCENTRATED INDUSTRIES

For illustrative purposes it is useful to examine the characteristics of the concentrated industries. This is done in Table 4 for the industries in 1975 and 1993 for which the CR4 exceeded 75 per cent. The results suggest the following pattern:

- Many of the concentrated industries in 1993 experienced some instability in their concentration levels; for example, 7 of the 22 persistently concentrated industries (those industries with a CR4 exceeding 75% in 1975 to 1993) had changes in concentration of more than 10 percentage points during that period.
- Allowing for foreign trade reduces the concentration measure in most of the highly concentrated industries. Of the 24 domestic concentrated industries that could be adjusted for foreign trade, eight have low or moderate levels of trade-adjusted concentration (less than 75%). Concentration is substantially lower after trade adjustments in carpets and rugs (64%), wooden boxes and containers (71%), paper products (68%), structural clay products (32%), and shipbuilding (20%).

- High concentration is to some extent associated with foreign ownership, but much less so with state ownership. In the case of foreign ownership this arises because foreign enterprises and high concentration share common structural characteristics, such as high capital intensity, technology intensity and product differentiation. In the case of state ownership, in only two of the 29 industries (fertilizer and ship building) do state enterprises contribute a majority of value-added. In an additional case, a government-foreign joint venture is the major producer. In two other industries (cement and steel) state involvement is significant. Two industries (animal slaughtering and beer) are characterized by significant regional government involvement.
- Many, but not all, received relatively high effective protection from imports in 1995, well in excess of the average for manufacturing as a whole. However, most of these industries are far less protected in 1995 than they were in the mid 1980s. Substantial reductions in protection are observed in ice cream (ISIC 31122), carpets and rugs (ISIC 32140), sheet glass (ISIC 36220), motor bikes (ISIC 38440), cigarettes (3142/3) and jewelry (ISIC 39010). The effective rates of protection reported in Table 6 refer to 1995. Under the recent trade policy reforms, tariff rates on most imports are, or will be, under 10% by the year 2003, and most of the few remaining quantitative restrictions will be eliminated. This suggests that most concentrated industries will be subject to strong import competition.
- Most of the industries are very small. Only seven of the 28 concentrated industries in 1993 have a share exceeding 1 per cent of MVA (recall there are 102 industries in our sample). In over half the cases the share is less than 0.3%. Many Indonesian industries are concentrated partly because of their small domestic market sizes.
- Many of the concentrated industries are highly capital intensive (and thus have large economies of scale) or highly product differentiated. Fertilizer, cement, sheet glass, paper and paper products, motor cycles, motor vehicles, cigarettes, noodles, malt beer and cosmetics are all characterized by high capital intensity, as indicated by the fact that their non-wage value added (NWVA) per employee is greater than the manufacturing average.
- A number of the concentrated industries (wheat flour milling, cement, fertilizer, steel production) have had government constraints on domestic competition for most of the last two decades.
- Finally, the table lists two low concentrated industries (sugar processing and plywood production) that have constraints on competition during this period. These constraints are likely to have perpetuated the ‘overcrowding’ of sub-optimal plants, thereby maintaining an inefficiently low level of concentration.

TABLE 4 *Characteristics of Highly Concentrated Industries*

ISIC No.	Industry	Four-firm Concentration Ratio				Ownership	
		Domestic CR4		Trade-adjusted CR4	(1993 % of production)		
		1975	1993		Change	1993	Foreign
Persistently concentrated industries							
31111	Animal slaughtering	90.1	89.0	-0.3	89.0	0	66
31122	Ice cream	96.9	95.2	-1.7	95.2	0	0
31164	Proc veg and fruit	80.2	89.8	9.6	79.2	0	0
31164	Wheat flour	100.0	100.0	0.0	100.0	0	0
31260	Spices	75.4	77.6	2.2	na	14.1	0
31310	Alcoholic liquors	98.1	100.0	1.9	na	0	0
31320	Wine	79.0	96.4	17.4	81.9	0	0
31330	Malt beer	99.1	97.8	-1.3	89.1	99	0
31430	White cigarettes	76.3	93.9	17.6	93.5	54	0
32140	Carpet & rugs	94.7	78.3	-16.4	63.5	7	0
33120	Wooden boxes	75.6	84.5	8.9	71.3	24	0.2
34190	Paper products	97.7	86.4	-4.7	68.2	34	0.17
35120	Chemical fertiliser	100.0	80.3	-19.7	75.5	10	85
35231	Soap & detergents	91.2	76.0	-15.2	74.5	43	1
35510	Tyres	87.5	75.8	-11.7	73.4	44	0
36220	Sheet glass	100.0	90.6	-9.4	87.2	90	0
36310	Cement	93.9	83.0	-10.9	82.0	6	31
36490	Structural clay products	93.9	89.5	-4.4	32.0	0	12
38430	Motor vehicles	100.0	100.0	0.0	100.0	50	0
38440	Motor cycles	96.2	96.5	0.3	96.5	16	0
39010	Jewellery	85.9	85.5	-0.4	na	13	0
39020	Musical instruments	100.0	98.6	-1.4	87.8	98	0
Industries that shifted to the highest CR4 class							
31171	Noodles	44.6	96.1	51.5	96.0	0	0
31420	Clove cigarettes	63.5	80.8	17.3	80.8	0	0
32160	Kapok	35.6	81.8	46.2	na	29	15
35222	Traditional medicine	74.6	80.3	5.7	80.3	5	0
35232	Cosmetics	71.5	77.5	6.0	74.4	57	0
38411	Shipbuilding	57.7	75.3	17.6	20.6	1	58
Concentrated industries that shifted to a lower CR4 class							
31112	Processed meats	99.2	71.5	-27.7	52.7	0.7	1.3
31121	Milk products	86.8	63.1	-23.7	52.8	62	5.7
31270	Food pastes etc	77.6	64.5	-13.1	na	72.7	0
31340	Soft drinks	77.7	39.5	-38.2	39.0	33	0.1
32330	Leather products	92.4	38.7	-53.7	36.9	60.1	0
32400	Footwear	77.8	31.2	-46.6	31.0	47	0.3
34120	Paper board products	80.4	34.8	-45.6	27.5	16	0.4
35130	Resins	83.9	51.2	-32.7	16.6	3	47
35140	Pesticides	91.0	48.9	-42.1	46.0	42	2
36110	Ceramics	91.4	37.8	-53.6	28.2	25	2
37100	Steel & iron	86.0	61.0	-15.0	48.9	23	41
38140	Metal containers	78.8	56.0	-22.8	na	36	0
38311	Storage batteries	86.3	62.0	-24.3	53.0	58.8	0
38320	Electronics etc	85.2	43.3	-41.9	5.8	49.7	12.6
39030	Sports equipment	85.9	68.4	-17.5	na	60	0
39040	Toys	90.6	34.4	-56.2	na	70	0
39060	Stationery etc	100.0	64.6	-35.4	40.3	4	0
31181	Sugar processing	17.4	20.7	3.3	19.4	0.3	74
33113	Plywood	53.9	12.9	-41.0	12	11	0.8
Average		63.6	53.5	-10.1	41.1	22.5	9.4

^aERPs (effective rates of protection) taken from Fane and Condon (1996).

TABLE 4 (cont.) *Characteristics of Highly Concentrated Industries*

Industry	ERP ^a	MVA (%)	Ratio of NWVA per Employee to Manufg Avege	Forms of Regulatory Control ^b
	1987, 1995	1993	1993	
Persistently concentrated industries				
Animal slaughtering	70, 195	0.01	0.22	
Ice cream	600<, 85	0.02	0.39	
Proc veg and fruit	21.2, –21	0.18	0.45	
Wheat flour	600<, –33	0.32	4.39	entry, ntb, price, distribution*
Spices	na, na	0.08	0.51	
Alcoholic liquors	115, 74	0.00	0.08	entry, ntb
Wine	115, 74	0.03	0.36	entry, ntb
Malt beer	115, 74	0.35	5.11	entry, ntb
White cigarettes	600<, 123	0.44	3.73	
Carpet & rugs	44, –6	0.11	1.60	
Wooden boxes	64, 161	0.04	0.43	
Paper products	44, 41	0.67	1.16	marketing*
Chemical fertiliser	77.1, –19	2.07	2.84	distribution, price, ntb
Soap & detergents	114, 386	0.50	0.88	
Tyres	600<, 600<	0.82	1.15	entry (lifted late 1980s)
Sheet glass	139, 5	0.19	1.21	
Cement	170, –12	1.52	2.89	price, distribution*
Structural clay products	48, 53	0.02	0.52	
Motor vehicles	498, 600	3.92	4.33	local content*
Motor cycles	600<, 0	3.22	12.08	
Jewellery	122, –1	0.24	1.62	
Musical instruments	136, 75	0.16	1.41	ntb
Industries that shifted to the highest CR4 class				
Noodles	52, 143	4.83	7.59	monopoly vertical integration
Clove cigarettes	600<, 123	9.57	2.20	clove monopoly,* price, entry
Kapok	44, –6	0.13	1.02	
Traditional medicine	na, –7	0.07	0.14	ntb
Cosmetics	114, 132	0.67	1.76	
Ship building	6.1, 2	1.06	1.52	import ban*
Concentrated industries that shifted to a lower CR4 class				
Processed meats	600<, –1	0.03	0.31	
Milk products	600<, 99	0.54	4.02	local content*
Food pastes etc	na, na	0.49	1.78	
Soft drinks	86, 386	0.46	0.65	
Leather products	583, 7	0.34	0.32	
Footwear	583, 7	3.60	0.42	
Paper board products	44, 41	0.69	1.07	
Resins	55, –9	0.06	0.52	
Pesticides	77, 45	0.32	0.91	distribution
Ceramics	600<, 41	0.91	0.63	
Steel & iron	22, –1	6.85	5.07	
Metal containers	106, 175	0.34	0.47	
Storage batteries	600<, 3	0.24	1.58	
Electronics etc	92, 81	1.62	0.78	
Sports equipment	–77, 3	0.07	0.31	
Toys	na, na	0.23	0.13	
Stationery etc	na, na	0.06	0.12	
Sugar processing	600<, 55	1.60	0.56	price, ntb, distribution
Plywood	22, 52	6.02	0.75	distribution, price*
Average	80, 23			

^bSource: Xie and De Bruyn Kops (1995) and the author's fieldwork in 1995.
 'ntb' = non-tariff barrier; * denotes deregulation under recent IMF structural reform program.

4 INDUSTRIAL CONCENTRATION IN SELECTED COUNTRIES

It is of interest to compare concentration levels in Indonesian manufacturing with those of other countries. Are there consistent patterns in the degree of concentration in similar industries across diverse economies? Is average concentration higher or lower in Indonesian manufacturing industries compared to other countries? Because there are substantial differences across nations in industrial classification systems and in the extent to which data are reported for done more finely subdivided classes, some caution should be taken when making comparisons across countries.

TABLE 5 INTERNATIONAL COMPARISON OF CONCENTRATION RATIOS IN SELECTED INDUSTRIES

Industries	Indonesia (CR4 in 1993)		South Korea (CR3 in 1987)		Australia (CR4 in 1988)		United Kingdom (CR5 in 1989)	
Cigarettes	76a	(74)	99	(98)	100	(94)	99	(89)
Sugar processing	20	(12)	100	(75)	100	(100)	100	(93)
Flour milling	100	(97)	51	(48)	74	(73)	77	(77)
Bakery and Noodles	92	(92)	84	(84)	60	(57)	52	(52)
Soft drinks	40	(37)	67	(67)	67	(67)	54	(54)
Footwear	31	(26)	50	(50)	40	(38)	39	(20)
Garments	26	(20)	12	(17)	19	(15)	16	(10)
Weaving	36	(30)	49	(42)	57	(27)	37	(9)
Sawmill	13	(12)	29	(26)	23	(20)	26	(0)
Cement	83	(82)	83	(82)	82	(81)	84	(82)
Steel and iron	71	(43)	84	(41)	80	(70)	95	(72)
Ship building	75	(20)	86	(73)	72	(57)	38	(29)
Chem. Fertilizer	80	(75)	64	(49)	95	(88)	48	(20)
Motor vehicles	96	(96)	68	(55)	81	(54)	84	(41)

Notes: Foreign trade-adjusted CR4 in parenthesis

Indonesia and Korean concentration ratios are based on establishment data. Australian and United Kingdom ratios are based on firm data. All CR4s are based on four-digit industries, except for the U.K which is based on the three-digit classification.

a. Indonesian cigarette industry includes both clove and 'white' cigarettes.

Sources: for Australia, Australian Bureau of Statistics; for South Korea, Korea Development Institute; for United Kingdom, Clarke (1993).

Table 5 presents concentration ratios of 14 comparable industries in four countries: Indonesia, Korea, United Kingdom and Australia, with foreign trade-adjusted CR4s in parenthesis. A considerable amount of variation among the four countries is evident, but one can see that certain industries - for example, cigarettes, cement, sugar processing (except in Indonesia), flour milling and fertilizer - tend to be relatively highly concentrated in every country, while others such as weaving, garments, sawmills and footwear, tend to be relatively unconcentrated. Variation in concentration some of the industries in the four countries reflect differences in domestic market

size, the stage of industrial maturity, and the degree of government intervention; for example, concentration in the Indonesian sugar processing industry is much lower than in the other three countries because the government's trade policy has protected a large number of small, outdated high cost sugar processing factories. Concentration in wheat flour milling is also higher in Indonesia because the government had restricted entry into this industry.

This qualitative impression is verified by correlating the concentration ratios for each nation pair (table 6). We drop the sugar processing industry from the table because the Indonesian government's policy on sugar processing has substantially distorted the level of concentration in the domestic industry. Because of the small sample size, this industry has an undue influence on the correlation coefficients. The matrix of intercorrelations is as follows:

Table 6 Rank Correlation Coefficients Between Country Pairs

(a) Domestic concentration

	Indonesia	Korea	United Kingdom
Australia	0.74	0.75	0.84
United Kingdom	0.67	0.76	
Korea	0.62		

(b) Foreign trade-adjusted concentration

	Indonesia	Korea	United Kingdom
Australia	0.65	0.64	0.83
United Kingdom	0.70	0.69	
Korea	0.54		

Based on data in table 5, minus the sugar processing industry (see text)

All the correlation coefficients are positive, and are statistically significant at the 95 per cent confidence level or better. Except in the case of Korea, adjusting domestic concentration to foreign trade does not significantly alter the correlation coefficients between the countries: if concentration in some industry is relatively high in one nation, it tends to be relatively high in other too. There are some notable differences in the correlation coefficients between nation pairs. First, Indonesia's domestic concentration correlation coefficients with the other three countries are the lowest, suggesting that Indonesia's concentration hierarchy is less similar to the other three countries than they are to each other. Second, adjusting domestic concentration to foreign trade reduces Korea's correlation coefficients with the United Kingdom and Australia, probably reflecting differences in comparative advantage and trade policy during the late 1980s.

A danger in any such analysis is that the small industry sample - we could only compare 14 out of our 102 industries with equivalent industries in the three other countries - may not be representative. However, a number of other comparative studies have reported similar conclusions to ours. Meller's (1978) study compared a number of identical industries between ten Latin American countries. It showed that all of these countries have similar seller concentration hierarchy among their industries: the industries that have high concentration levels

in one country tend to have high concentration levels in the other nine countries. Highest levels of seller concentration were recorded in cigarettes, basic metals, certain chemicals, paper, cement and certain foodstuffs and beverages. Scherer et al (1975) found similar results in a comparison of 12 industries in six industrialized countries.

TABLE 7 SIMPLE AVERAGE CONCENTRATION RATIOS OF SELECTED COUNTRIES

Countries	Year	Average CR4
Panel A: Developing Countries		
South Korea	1987	57
Indonesia	1993	54
Pakistan	Mid-1980s	68
Turkey	Mid-1980s	67
Chile	1979	50
Malaysia	1990	53
Sri Lanka	1988	75
Panel B: Developed Countries		
United States	1982	39
United Kingdom	1989	41
Canada	1979	50
Australia	1988	53
New Zealand	Mid-1980s	58

Sources: for Australia, Australian Bureau of Statistics; for South Korea, Korea Development Institute; for Malaysia, Department of Statistics (1990); for United Kingdom, Clarke (1993); for U.S.A Scherer and Ross (1990); for Chile, de Melo and Urata (1986); for Canada, Baldwin and Gorecki (1994); for Pakistan, Turkey and Sri Lanka, and New Zealand, Centre for International Economics (1990).

Table 6 presents the simple average concentration ratios for selected countries, chosen because of the availability of published data. Concentration ratios for the industrializing countries listed in panel A of Table 8 measure establishment concentration; those of the developed countries listed in panel B measure firm concentration, and thus are not directly comparable with the ratios presented in panel A. These numbers should be interpreted with caution because they refer to different years. The countries in each panel are arrayed in descending order according to the size of their manufacturing sector in the reference year in the table (the ranking of these countries' manufacturing sectors has not changed in the last ten years). The table shows substantial variation in average industrial concentration among the countries. Sri Lanka, Pakistan, and Turkey stand out as having highly concentrated manufacturing sectors. Indonesia's average concentration is also high by international standards, although slightly lower than South Korea's. With the exception of New Zealand, the countries listed in panel B have lower concentration ratios than most of the industrializing countries' concentration ratios. Seller concentration is typically higher in industrializing countries than in developed countries because the domestic markets of the former are proportionately smaller. As Scherer and Ross (1990) observe, 'frequently, the markets of small countries are simply too small to accommodate many viable competitors'. In addition, government intervention in the market place is typically greater in industrializing economies than in these developed countries and this has had an impact on concentration levels in the former.

5 DYNAMICS OF INDUSTRIAL COMPETITION

A major weakness of concentration statistics is that they ignore the dynamics of the competitive process within an industry. Economists have long recognized that high concentration ratios can exist along side considerable instability in leading firms' rankings and market shares. Generally, in the absence of regulations or specific-firm privileges restricting competition, changes in leading firms' shares or rankings would indicate that healthy competitive conditions are prevailing in that industry, even if it is persistently concentrated. Firm turnover – defined here as changes in market shares or rank positions - is one of the manifestations of the creative destruction that arises from innovation in technology and product markets permits some firms to grow at the expense of others. It is this way in which competition in ideas, in new methods, in new organizational techniques is transmitted to the structure of markets.⁶

There are oligopolies in Indonesia that are characterized by a constant churning of market shares among the leaders, indicative of vigorous competition. A thorough examination of firm turnover in concentrated industries is beyond the scope of this paper. But for illustrative purposes it is useful to briefly review the dynamics of the competitive process in four highly concentrated Indonesian industries: cigarettes, motor cycles, sheet glass and cement. This is done in Table 7. Table 7 describes the characteristics of the four industries, including the changes in the CR4 ratios between 1975 and 1994.

In the cigarette industry, seller concentration has steadily increased over time; from 43% in 1976 to 76% by 1994. However, high concentration in the 1990s hides considerable instability in leading firms' market shares. Both Gudang Garam's and Djarum's market shares expanded rapidly over this period. Gudang Garam's share increased from 12 per cent in 1979 to 43 per cent in 1994, a change of 31 percentage points. Djarum's share expanded from 13 per cent in 1979 to 28 per cent in 1989, but declined to 18 per cent in 1994. Sampoerna achieved a significant increase in share since the late 1980s, and by the mid-1990s surpassed Bentoel as the third largest cigarette producer in Indonesia.

Turbulence is also observed in the changes in the rank order of the leading four firms. Two of the top four firms (Gudang Garam and Djarum) in 1979 remained in the top four in 1994. Two firms (BAT and STTC) exited out of the top four firms after 1979, and two firms (Bentoel and Sampoerna) entered the top four firms before 1994. This continuous change in market shares and rankings among market leaders suggests that healthy competitive pressures operate in the cigarette industry. In this industry, the successful firms have combined efficiency with effective marketing mixes. These firms have created favorable images for their brands through advertising, sales promotion, packaging and taste, as well as pricing. At the same time, they have raised their productivity growth through mechanization of production, and adopting new organizational techniques. Establishing competitive distribution networks have also been a major factor in their success (Bird, 1999a).

The motorcycle industry is characterized by high capital intensity, product differentiation and seller concentration. The four-firm concentration ratio was 98 percent in 1995. Again, the high concentration ratio hides considerable instability in leading firms' market shares. While

⁶ Firm turnover, however, is not a direct measure of allocative efficiency. There are static models of market outcomes where efficiency outcomes are produced with no turnover of market share. That is, the absence of firm turnover is in principle consistent with competition. Nevertheless, turnover does have important implication for economic efficiency since competition in new products and processes is so critical for economic progress and development.

Honda is by far the largest selling brand in Indonesia, its market position has declined significantly in the 1990s, as indicated by the fact that its share of the market has declined from 57 per cent in 1990 to 50 percent in 1995. Conversely, the market shares of the next two largest sellers, Yamaha and Suzuki, increased during this period; market share of Yamaha motor cycles increased from 22 per cent to 26 per cent and Suzuki increased from 16 per cent to 20 percent. Thus, despite the extremely high four-firm concentration ratio in the industry, the data on shifts in market shares during the first half of the 1990s of the three leading firms indicate that competitive pressures are at work in the domestic market of this industry (Thee Kian Wie, 1997).

The sheet glass industry is also characterized by high capital costs and concentration. Again, the concentration ratio hides considerable competitive pressures that exist in this industry in the 1990s. Until the mid 1980s, the sheet glass industry was a monopoly, protected by a high import tariff and quantitative import restrictions, and a restrictive investment regime. In a series of steps the government deregulated the industry. First, the government opened up the industry to new investment. Second, the government removed the quantitative import restrictions and continuously reduced the import tariff rate. By 1995, the import tariff rate was as low as 5% for most sheet glass products. These government reforms established a policy environment conducive towards greater competition and economic efficiency. In 1992, a large domestic firm entered the market and a price war between firms pursued. Within four years, the new entrant captured around 35% of the domestic sheet glass market, mainly at the expense of the incumbent dominant firm. The industry is now characterized by periodic price wars and prices of sheet glass are believed to be relatively low.

The experience of cement industry contrasts with that of sheet glass over the same period. The cement industry, like sheet glass, is characterized by high capital costs and high seller concentration. However, government regulations had shaped the structure of the industry and the nature of competition. Until February 1998, when the industry was deregulated, the regulatory arrangements in the cement industry were based on a decree issued by the Minister of Trade in 1979. The decree governed the distribution of cement, both domestically and for exports, and included the setting of retail prices for principal cities in each of the 27 provinces. The objective of this system was to ensure a continuous supply of cement to all provinces at stable prices. However, a recent study showed that the distribution system had limited success in stabilizing prices in the face of cyclical demand for cement (Plunkett et al, 1996). Rather, the distribution arrangements exacerbated price instability by greatly reducing the contestability of regional markets. The administered allocation of supplies prevented supplies from other regions, including imports, entering to dampen price increases when demand arose. The distribution arrangements resembled a cartel as regional markets and market shares were allocated among firms. In 1998, the government removed these anti-competitive regulations, establishing a policy environment conducive towards more competition in the industry.

Three conclusions can be drawn from these examples. First, considerable competition among market leaders can exist in persistently concentration industries. Second, while decreasing concentration is typically associated with greater competition, increasing concentration, as in the cigarette industry, can also be the result of the healthy competitive struggle between firms, without resulting in economic inefficiencies. Third, government entry and distribution restrictions and price controls reduce competition as it did in the cement industry prior to 1998.

TABLE 7 CHARACTERISTICS OF FOUR OLIGOPOLIES IN INDONESIA

	CIGARETTES	MOTOR CYCLES	CEMENT	SHEET GLASS
<i>Market structure</i>	Oligopoly with a competitive fringe	Oligopoly	Oligopoly	Oligopoly
<i>(CR4 Ratio in 1975 and 1994)</i>	1975=43% 1994=76%	1975=96% 1994=98%	1975=93% 1994=84%	1975=100% 1994=90%
<i>Technology</i>	Both capital and labour-intensive technologies are used	Capital-intensive	Capital-intensive	Capital-intensive
<i>Product Characteristics</i>	Consumer good Product differentiation	Consumer good Product differentiation	Producer good Homogenous Regional-markets	Producer good Homogenous
<i>Past and current Regulations</i>	Minor entry restrictions, Import tariffs, Differential minimum retail prices and excise taxes, Clove monopoly	Ban on imports of CBU removed in 1993 Import tariffs on CBU	Distribution controls, Price controls Significant state ownership	Open investment policy since the mid-1980s. Very low import tariff rate of 5%
<i>Nature of Competition</i>	Advertising Some price competition	Advertising Price competition	Cartel-like practices (before 1998 reforms)	Price competition
<i>Recent Deregulation</i>	Cloves monopoly disbanded in June 1998.		Distribution and price controls eliminated in February 1998.	

Source: Bird (1999);Thee Kian Wie (1997); sheet glass added

6 IMPACT OF CONCENTRATION ON ECONOMIC PERFORMANCE

Does high industrial concentration, independent of other structural and policy variables, reduce economic efficiency? Typically, researchers test this hypothesis using two empirical methodologies; the first method statistically estimates the impact of concentration on different measures of performance for a cross-section of industries either at one point in time, or over time; the second method tests this hypothesis for individual industries using price and cost time series data. Unfortunately, there are not many of these studies for Indonesia. Two recent studies tested this concentration-performance hypothesis for Indonesian manufacturing using the first methodology. Aswicahyono (1998) estimated the impact of concentration and alternative measures of competition on total factor productivity growth in manufacturing for a cross section of 28 three-digit industries over the period 1975 to 1993. He found a positive relationship between the CR4 ratio and TFP growth; that is, the CR4 ratio was associated with relatively high TFP growth. He argued that this was consistent with efficiency benefits due to economies of scale. Bird (1999) observed that, among other factors, economies of scale is an important determinant of industrial concentration in Indonesian manufacturing, and it appears that the CR4 ratio captures this scale effect in the TFP growth equation. Aswicahyono (1998) also included a measure of firm turnover – an index of changes in market shares - to capture the dynamic nature of competition within an industry. He found a positive relationship between firm turnover and TFP growth indicating that competition - in the sense of firm turnover - created a positive environment for TFP growth. He also found that trade policy, measured by effective rates of protection, reduced TFP growth in Indonesian manufacturing.

Bird (1999) estimated the impact of industrial concentration on profitability for a cross section of 67 industries using data for 1985 (proxy for pre-deregulation period) and data for 1993 (proxy for liberalization period).⁷ He tested several alternative measures of concentration including:

1. Domestic concentration ratio (unadjusted for foreign trade)
2. Foreign trade adjusted CR4 ratio (or CR4MX)
3. Foreign trade-adjusted CR4 ratio interacted with effective rates of protection (CR4MX*ERP). This variable captures the combined effect of concentration and import protection on profits.

In this model, the domestic CR4 ratio performed badly, while the foreign trade adjusted CR4MX ratio performed marginally better. This result suggests that unadjusted trade CR4 ratios in a small open economy are inappropriate measures of competition. The preferred model specification was the one with the CR4MX-trade policy variable (CR4MX*ERP). These results for 1985 and 1993 are reproduced in Table 8.

The CR4MX*ERP, capital intensity, and output growth variables are all statistically significant and positively related to profits in 1985 and 1993. The result for

⁷ Database for this study is compiled from various sources including the CBS annual manufacturing survey of medium and large scale establishments and Input-Output tables.

TABLE 8 **DETERMINANTS OF PROFITABILITY: 2SLS RESULTS**
(2SLS coefficients reported)

Explanatory variables	1985 equation	1993 Equation
Constant	0.251*	0.227*
CRMX*ERP	0.314*	0.371***
Industry Growth	-0.198*	0.088***
Capital intensity	0.00001*	0.000006***
Product differentiation	-0.435	-0.259
Regional markets	-0.005	-0.005
Dummy variable	0.013	0.343*
Adjusted R-square	0.38*	0.11***
Het (a)	4.33	0.206
<u>Elasticities evaluated at sample mean values</u>		
CR4MX*ERP	0.212	0.102
Industry growth	-0.221	0.100
Capital intensity	0.121	0.065

Source: Bird (1999)

Notes: all equations are in linear form

* denotes statistically significant at 1%, ** at 5%, *** at 10%

Number of industries = 67 Source:

CRMX*ERP is treated as an endogenous variable in the model.

Profit margin is the industry price-cost margin or the ratio of industry value added (less wages and miscellaneous costs) to output value.

Growth is the % change in industry output value for the previous five years

Capital intensity is capital stock divided by number of employees.

Product differentiation is advertising-output ratios

Regional market variable is proxy for markets that are regionally fragmented.

Dummy variable controls for industry outliers.

Data source: All variables are derived from data taken from the annual manufacturing survey of medium and large establishments, BPS. ERPs are taken from Fane and Condon (1996) Source for capital stock is Aswicahyono (1998).

the CR4MX*ERP variable indicates that concentrated industries (adjusted for foreign trade) with significant protection (tariffs and non-tariff barriers) from imports have higher profit margins than concentrated industries with relatively low rates of protection (low tariffs and no non-tariff barriers) from imports. This relationship was significantly weaker in the 1993 specification than in the 1985 specification, primarily as a consequence of trade liberalization. This result establishes a direct link between trade policy reform and competition in Indonesian manufacturing; trade policy reform increases import competition in concentrated manufacturing industries, which in turn narrows profits across concentrated industries, all other things being equal.⁸

⁸ Economic theory predicts that, in the long run, after adjustments to the trade policy reforms have taken place, concentration would have a significantly reduced impact on profitability as domestic prices for a small open economy would tend to be determined by foreign markets. The results for 1993 provide evidence supporting this proposition. The concentration-profits relation has weakened after the trade

In sum, the findings of Aswicahyono (1998) and Bird (1999) confirm that robust domestic competition, including import competition, creates a positive environment for economic efficiency. But their results also show that measures of industrial concentration are not good indicators of the level of competition and determinant of economic efficiency.

7 COMPETITION POLICY

The objectives of competition policy are to maintain and encourage competition as a vehicle to promote economic efficiency and maximize welfare by encouraging firms to compete with one another for consumers by offering products of lower prices, higher quality and better services. Trade liberalization, industry deregulation, privatization of public enterprises and a competition law are the major parts of the broadly defined term of 'competition policy'.

Policy reforms promote the increased use of the market mechanism to improve efficiency in the allocation of resources. Trade liberalization frees up international prices and signals; industry deregulation and privatization frees up domestic market signals. Competitive pressures from greater domestic rivalry and import competition resulting from these reforms restrain anti-competitive behavior of firms in domestic markets. Imports, for example, impose a ceiling on the prices dominant firms or cartels can charge consumers, effectively eliminating their market power to charge excessive prices.

In practice, countries take competition policy in steps. Industry and trade deregulation is addressed first. A competition law has typically been one of the last elements to be put in place. One rationale for this sequencing is that gains in efficiency can be more effectively pursued through trade liberalization and deregulation, supplemented with privatization. Once a sector has been liberalized by way of introducing new competitors into the market, competition law and its enforcement usually plays the primary role in maintaining competition as well as avoiding distortions caused by anti-competitive practices (e.g., erecting artificial barriers to entry) of firms should they arise.

To a large extent, Indonesia has followed this sequencing of reforms. By the time the financial crisis began in 1997, progress had been made in dismantling barriers to entry and other restrictions on competition. Deregulation of the industrial sector over the past decade or so eliminated some (but not all) of the restrictions on new entry, including foreign investment. The reform of international trade policies over the same period eliminated most of the licensing requirements related to importing goods.

reforms. These findings are also consistent with the results of previous studies for other developing economies that have liberalized (de Melo and Urata, 1986 for Chile and Weiss, 1993 for Mexico). Furthermore, the F-test for overall fitness of the regression is statistically weaker in the 1993 regression compared to the 1985 regression, and this may be indicative of the effects of the trade policy reforms on industry profits, as domestic prices tend to be determined by foreign markets. Also, the adjusted R-square (0.11) for the 1993 equation is very low, suggesting that the variables included in the model (concentration, trade policy protection, capital intensity and growth) only explain a small proportion of the inter-industry variation in price-cost margins. This compares to a much larger adjusted R square for the 1985 equation.

However, until recently when many remaining monopolies and cartels were deregulated, Indonesia's general approach to competition policy was ad hoc and unsystematic. The lack of competition in several major sectors of the Indonesian economy in the 1990s was largely the result of the government's industrial and trade policies. Industrial policy measures, such as entry and exit controls, public ownership of specific industries, distribution restrictions, price controls, and special assistance (subsidies and tax holidays) to specific firms all reduced domestic competition, as they prevented other firms from fully participating in the economy on a 'level playing field' basis. Trade policies such as remaining tariffs and non-tariff barriers prevented domestic firms from being efficient as they lack the competitive restraint that would come from imports. Among the well publicized of these were cement, fertilizer distribution, cloves trading, wheat flour milling, steel, sugar processing, BULOG, and the distribution system.

Recent policy changes have removed anti-competitive regulations in specific sectors, including eliminating the statutory basis of most of the remaining monopolies and cartels listed above. Import tariff rates on almost all products will be well below 10% by the year 2003. These reforms in the industrial and trade sectors have brought about substantial improvements in the competitive structure of a large number of industries.

THE ANTI-MONOPOLY AND UNHEALTHY COMPETITION LAW

Recent policy changes toward removal of trade and investment barriers and elimination of the legal basis of several monopolies and cartels share the same purpose, which is to promote economic growth based on improving industrial competitiveness and consumer welfare. A competition law and its enforcement usually plays the primary role in maintaining competition as well as avoiding distortions caused by anti-competitive practices (e.g., erecting artificial barriers to entry) of firms should they arise.

In April 1998, the government undertook, as part of its third Memorandum of Understanding with the IMF, to submit to parliament a competition law. Passed in February this year and due to come into force early next year, the law includes provisions relating to both structure and conduct; it prohibits price fixing agreements, market sharing agreements and vertical restraints, and has clauses covering vertical integration and price behavior of various kinds. While, the new law compares favorably with competition laws of other newly industrializing and transition economies, from an economics perspective there are some concerns with several substantive provisions of the law, their implementation and general enforcement. The remainder of this section will briefly address these issues.

The first concern is that expectations regarding the contribution of the law to reforms are high, and this is clearly reflected in the objectives of the law and discussions in the local media. The preamble of the law lists several objectives including 'preserve the public interest', 'create a good business climate by means of regulating sound business competition', 'guarantee equal opportunity', and 'increase efficiency'. Except for increasing efficiency, most of these objectives are vague and will inevitably lead to some confusion in the implementation of the law. Most of these objectives appear to be protecting competitors rather than the competitive process. Virtually all competition policy practitioners agree that a competition law should be designed to protect the

competitive process, and not competitors – whether small or large firms, private or state-owned enterprises. A system that protects individual competitors will almost surely lead to “soft” competition that sustains inefficiency, with adverse implications for competitiveness of the industrial system and economic growth. The goal of the future competition commission should be to protect the vigor of the competitive process, which in turn tends to protect the interests of consumers.

Another concern relates to several substantive provisions of the law. Many of the provisions in the law prohibit what are clearly anti-competitive practices such as market sharing arrangements and price fixing agreements. However, the law also prohibits or regulates certain kinds of business behavior that have unclear welfare or efficiency effects. Some of these business practices appear to be per se illegal (or strictly prohibited) in the Indonesian law when most other countries have not done so. We will briefly review the major provisions related to concentration of production, market shares, vertical restraints and predatory pricing (Table 9).

Concentration and market shares provisions

Some provisions of the law set parameters for the competition commission to open investigations on firms holding more than 50% of the market or a two or three firms with a combined market share of 75% for either abuse of dominant position and monopoly practices. These provisions appear to equate concentration of production with market share.⁹ This ignores the important role of imports. As indicated above, in a small, open economy concentration statistics unadjusted to foreign trade are irrelevant measures of seller concentration. Strong import competition constrains market power of monopolies and dominant firms. Second, as this paper shows, concentration statistics and market shares by themselves do not imply or presume anti-competitive practices or economic inefficiencies. High concentration and market shares can be consistent with healthy competition and efficiency.¹⁰ As indicated earlier, it is possible to find concentrated industries that have vigorous competition.

If a structural approach is applied to these articles then significant losses in economic efficiency are most likely to occur. A structure-based attempt to reduce to concentration or market shares could lead to ‘overcrowding’ of sub-optimal plants, duplication of products and excessive costs of production. The higher costs of production would be passed on to consumers and the welfare loss to them might be greater than if industries remained concentrated. This would have adverse implications for competitiveness of the economy and economic growth. Most countries deal with high concentration through trade policy reforms and deregulation; a strategy Indonesia has also pursued since the late 1980s.

⁹ The provision on monopoly, for example, suspects a firm of centralizing production resulting in monopoly practices if the firm has a market share greater than 50% or if the two or three firm concentration ratio is greater than 75%.

¹⁰ Our discussion on concentration and market shares in sections 3 took the industry as the market. However, in reality calculating the market and market share of a firm is much more complicated. A market includes all significant product substitutes. To determine this, elaborate demand equations need to be estimated so that product cross price elasticities can be derived.

Vertical restraints

The competition law prohibits several vertical restraints; exclusive dealerships and territories, tie agreements, and resale price maintenance price (RPM). Exclusive dealerships (the producer's distributors are not allowed to distribute rivals' products) appear to be strictly prohibited under the law. However, almost every economist who has written about these practices recognize that these can be either harmful or beneficial, depending upon the circumstances, but that in most cases they are beneficial. By providing the right incentives, producers can influence distributors to increase their investment in materials handling and information systems necessary for efficient distribution of commodities. These benefits are likely when there is enough inter-brand competition, because of both competing manufacturers and the possibility of easy access to imports through low tariff and non-tariff barriers. Making them per se illegal would reduce efficiency in cases where the effects of these practices are beneficial. For these reasons, most countries that have implemented competition laws do not prohibit exclusive dealing. Usually, these various types of practices are assessed on a case-by-case basis under the rule of reason approach, which weighs the relative costs and benefits of the business practice.

Tying agreements (purchase of a certain product is tied to the purchase of another product) are strictly prohibited under the law. Again, some of these agreements are beneficial as they can reduce transaction costs. Like exclusive dealerships, benefits of ties are greater when there is sufficient inter-brand competition. In the US, ties are treated as per se violations only when the firm has a monopoly position and where ties have no compelling efficiency rationale. Resale price maintenance (RPM) agreements are also strictly prohibited under the Indonesian law. Whether on balance RPM is a bad thing is still hotly debated by economists. While the US has tended toward per se prohibition, most other countries have not done so.

Therefore, from an economics perspective an alternative would be to assess these practices on a case-by-case basis under the rule of reason approach, which weighs the relative costs and efficiency benefits of the business practice, and not to be strictly prohibited as it appears to be the case under the law.

Price behavior

The competition law prohibits a firm from selling its product below cost with the intention to drive out rivals; that is, selling at a loss. The same provision also includes setting 'too low a price', but not selling at a loss. What this provision supports is "soft" competition. From an economics perspective, the fundamental objective of competition policy is to encourage firms competing with one another for consumers by offering low prices, high quality and better services. However, this provision prohibits firms selling at too low a price, even though they are making small profits. Vigorous implementation of this provision is likely to be used by inefficient firms and or cartels for protection from competition (and possibly imports) on the premise that vigorous price competition is causing injury to competitors. If so, then this kind of outcome would be clearly anti-competition.

TABLE 9 INDONESIA'S COMPETITION LAW

PROVISION	ECONOMIC PERSPECTIVE WELFARE EFFECTS	TREATMENT IN COMPETTITION LAW
STRUCTURAL PROVISIONS		
Concentration of production (K-concentration ratio above 75%)	No effect is presumed	Presumption of monopoly practices?
Market share above 50%	No effect is presumed	Presumption of monopoly practices?
CONDUCT PROVISIONS		
Exclusive dealerships	Unclear	Prohibited
Exclusive territories	Unclear	Prohibited
Tie-ins	Unclear	Prohibited
Selling below cost	Unclear	Rule of reason
Selling at too low prices	Competitive	Rule of reason

Implementation and enforcement

The third issue relates to implementation and enforcement of the new law. How vigorous should the new Competition Commission enforce the competition law? A concern in other transition economies in applying new competition laws is the continued reliance on administrative remedies to address transitory monopolies created by past government policies or to promote different goals other than competition. In this context there is likely to be a temptation for competition agencies to replace past industrial policies with excessive competition law enforcement. There may be a heavy reliance on concentration ratios and to intervene in the market to reduce market shares of leading firms, or to excessively regulate business practices that have unclear welfare effects. International best practices in competition law enforcement suggest that competition agencies should focus more on firm conduct, preventing firms from erecting artificial barriers to entry and establishing arrangements and mechanisms that allow them to collude to set excessive prices in the marketplace.

Indonesia, like all other countries that have introduced a competition law in recent years, faces a steep learning curve in implementation and enforcement of the law. There are some kinds of anti-competitive behavior that are relatively easy to deal with such as price fixing and market sharing agreements. Both are investigative and information-intensive, but are not conceptually complex. However, the assessment of other practices like vertical restraints requires highly technical assessments of entry barriers, definitions of relevant market, and assessment of efficiency effects. A heavy enforcement of the law increases the risks that wrong decisions could be made, as the new agency will lack experience in this area. A vigorous, but minimalist approach should be adopted. In the early years of the commission, it would be wise for the agency to focus on blatant anti-competitive behavior such as price-fixing agreements and market sharing agreements, so that the commission can acquire experience in investigations and technical analysis for more sophisticated cases later on.

8 SUMMARY

The major finding of this study is that measures of concentration are not reliable indicators of the level of competition in a small, open economy like Indonesia is now. This arises for at least three reasons. First, in a small, open economy, domestic concentration measures (unadjusted for foreign trade) are irrelevant measures of market power, as they do not include foreign competitors in the domestic market. Furthermore, import competition constrains market power of dominant firms in most kinds of markets. Second, concentration is only one element of market structure; others include barriers to entry. Finally, concentration statistics are static measures in that they simply record the characteristics of a size distribution at some particular point. If the identity of the dominant firms were to change over time, then even persistently high levels of concentration would not imply the absence of competitive forces. Changes in the relative positions or market shares of the leading firms would indicate the prevalence of healthy competitive conditions in that industry.

The results of this study indicate that there is a long-term decline in Indonesia's concentration since the mid 1970s, particularly in those industries that were concentrated then. This pattern is typical of a rapidly growing small industrial sector: initially high levels of concentration, declining over time as rapid growth reduces barriers to entry and broadens the industrial base.

The study found that allowing for trade substantially reduces average concentration measures: in 1993 average concentration without the adjustment of foreign trade was 53%, while with trade adjustment it was 41%, a difference of 12 percentage points. This suggests that competition is stronger in Indonesian markets than domestic concentration ratios would suggest.

Finally, statistical analysis of the impact of concentration on profits for a cross section of 67 industries shows that concentrated industries with high levels of protection have relatively high profit margins compared to concentrated industries with low levels of protection. This relationship was significantly weaker in the 1993 specification than in the 1985 specification. This result establishes a direct link between trade policy reform and competition in Indonesian manufacturing; trade policy reform increases import competition in concentrated manufacturing industries, which in turn narrows profits across concentrated industries, all other things being equal.

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